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NCHSR NATIONAL HEALTH CARE EXPENDITURES STUDY -- PSYCHOTROPIC DRUGS: USE, EXPENDITURES, AND SOURCES OF PAYMENT DATA PREVIEW 14

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Psychotropic Drugs: Use, Expenditures, and Sources of Payment

Gail Lee Cafferata and Judith A. Kasper

Of the 900 million medicines prescribed in ambulatory care settings in 1977, 9.2 percent were for psychotropic or mood modifying substances, a category of prescribed medicines that includes antianxiety agents, sedatives and hypnotics, antipsychotic agents, and antidepressants. Prescriptions for this category of drugs were written for 9.1 percent of the noninstitutionalized population, at an average annual expense of $27 per person. Half of these prescriptions were for antianxiety agents, which were the largest single drug class among psychotropic medicines. Mental disorders and conditions of the circulatory system, respectively, accounted for 52 percent and 14 percent of all psychotropic drug prescriptions in 1977.

This data preview from the National Health Care Expenditures Study examines the use of and expenditures for psychotropic drugs by selected sociodemographic and health-related characteristics of the noninstitutionalized civilian population. It supplements estimates on the use of and expenses for prescribed medicines in general presented in *NHCES Data Preview 9* (Kasper, 1982). Furthermore, the distribution of psychotropic drugs is shown according to the condition for which they were prescribed and the percent prescribed for each condition group. All findings and estimates are from final household data reported for the period January 1 to December 31, 1977. (See page 10 for the sources and limitations of these data.)

These survey data on psychotropic drug use extend findings from two national surveys of adult psychotherapeutic drug use (Mellinger and Balter, 1981; Parry, Balter and Mellinger, 1973) which examined prevalence and patterns of use, as well as related patient complaints and physician prescribing patterns.

Rates of psychotropic drug use

In 1977, 9.1 percent of the population in the United States obtained at least one prescribed psychotropic medicine (Table 1), for an average of 401 psychotropic medicines per 1,000 population and 4.4 items per person obtaining such medications.

Sociodemographic characteristics. For both sexes, use of psychotropic drugs increased with age, from 2.2 percent among males less than 19 years to 14.3 percent among males 65 years or older, and from 1.7 percent to 23.3 percent among females in the corresponding age groups. On the whole, and with the exception of the youngest age group, females were almost twice as likely as males to obtain a psychotropic drug (11.8 percent versus 6.2 percent). These differences in use by sex were observed for all adult age groups: 17.5 percent of women 35 to 49 years used psychotropic drugs compared with 8 percent of males, and 23 percent of women 50 to 64 years compared with 12.9 percent of males. The exception to this pattern of relatively low use by all but elderly males were disabled veterans of all ages, of whom 15 percent used psychotropic drugs in 1977.

Differences in use by ethnic/racial groupings were small, although whites were slightly more likely to obtain a prescribed psychotropic

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Table 1. Use of psychotropic drugs: Percent of persons with prescriptions, mean number of psychotropic drugs per 1,000 population and per person with at least one psychotropic drug, and psychotropic drugs as percent of all prescribed medicines, by selected population characteristics. *NMCES household data: United States, 1977.*

Population characteristics	Total population	Persons with at least one psychotropic drug prescription	Psychotropic drugs per 1,000 population	Psychotropic drugs per person with at least one prescription	Psychotropic drugs as percent of all prescribed medicines
	Thousands	Percent	Mean		Percent
Total[a]	212,098	9.1	401	4.4	9.2
Sex					
All males	102,602	6.2	267	4.3	8.2
Less than 19 years	35,333	2.2	64	2.8	3.2
19 to 34 years	26,324	3.6	122	3.3	7.7
35 to 49 years	16,455	8.0	374	4.7	11.2
50 to 64 years	15,264	12.9	613	4.8	10.7
65 years and older	9,226	14.3	692	4.8	7.9
All females	109,496	11.8	526	4.4	9.8
Less than 19 years	33,531	1.7	50	2.9	2.7
19 to 34 years	28,127	8.2	263	3.2	6.5
35 to 49 years	18,026	17.5	739	4.2	13.3
50 to 64 years	16,754	23.0	1,220	5.3	13.5
65 years and older	13,058	23.3	1,132	4.8	9.5
Veteran Status[b]					
All veterans	26,097	8.8	379	4.3	9.5
With service connected disability	2,653	15.0	716	4.8	12.0
No service connected disability	23,444	8.1	341	4.2	9.1
All other males	39,321	8.2	384	4.7	9.6
Ethnic/racial background					
White	147,239	9.9	419	4.2	9.2
Black	19,573	7.4	289	3.9	7.5
Hispanic	8,821	7.3	277	3.8	8.8
Family income					
Less than $12,000	74,816	11.1	566	5.1	10.4
$12,000 to $19,999	55,970	8.9	351	3.9	8.8
$20,000 or more	80,726	7.3	279	3.8	7.8
Education[c]					
Less than 12 years	54,396	14.4	707	4.9	10.5
12 years	50,236	11.8	504	4.3	10.5
13 to 15 years	19,873	10.9	435	4.0	9.9
16 or more years	18,215	9.1	385	4.2	9.0
Annual employment status[d]					
Employed all year	85,147	8.4	301	3.6	8.5
Employed part of the year	19,717	9.9	37[illegible]	3.7	8.8
Not employed	54,975	15.4	825	5.4	11.6
Marital status[c]					
Single/never married	32,273	5.4	221	4.1	8.4
Married	94,538	12.6	549	4.4	10.1
Widowed	11,450	21.7	1,171	5.4	10.4
Separated/divorced	11,436	16.2	726	4.5	12.8
U.S Census region					
Northeast	47,136	8.9	389	4.4	9.6
North Central	58,039	7.8	377	4.9	9.2
South	67,357	10.3	455	4.4	9.2
West	39,565	9.2	356	3.9	9.0

[a]Includes all other ethnic/racial groups not shown separately, persons with unkown education, employment status, and marital status, as well as persons with negative income. [b]All males 20 years or older. [c]Excludes persons under 17 years of age. [d]Excludes persons under 14 years of age. **Source: National Center for Health Services Research.**

activity were more than twice as likely to have used a psychotr drug as persons without any activity limitation (17.8 percent ve 7.4 percent). Use also increased steeply with the annual nur of physician contacts and hospital stays. (Persons who obtaine refill of previous prescriptions may account for the small nur who obtained psychotropic medicines in 1977 without having n a physician contact during that year.)

Psychotropic drugs accounted for a smaller proportion of all scribed medicines for persons in excellent or good health or witl any limitation of activity than for those in fair or poor healtl those limited in their major activity.

Table 2. Use of psychotropic drugs and health status: Percent of persons with prescriptions, mean num of psychotropic drugs per 1,000 population and per person with at least one psychotropic drug, psychotropic drugs as percent of all prescribed medicines, by selected health indicators. *NMCES housel data: United States, 1977.*

Health indicators	Total population	Persons with psychotropic drug prescriptions	Psychotropic drugs per 1,000 population	Psychotropic drugs per person with at least one prescription	Psychotrc drugs as percent o all prescri medicine
	Thousands	Percent	Mean		Percent
Total[a]	212,098	9.1	401	4.4	9.2
Perceived health status					
Excellent	93,935	4.3	128	2.9	5.6
Good	78,902	8.9	336	3.8	7.9
Fair	22,046	22.9	1,198	5.2	12.5
Poor	7,100	38.0	2,605	6.8	14.2
Limitation of activity					
No limitation of activity	163,645	7.4	266	3.6	8.0
Limited, but not in major activity	3,541	17.8	1,077	6.1	11.2
Limited in amount or kind of major activity	8,064	29.4	1,607	5.5	11.8
Unable to carry on major activity	6,269	32.6	1,891	5.8	11.0
Number of physician contacts					
None	57,621	1.2	50	4.0	8.4
1 to 2	56,842	4.6	150	3.3	7.2
3 to 5	46,699	9.8	355	3.6	7.8
6 or more	48,937	23.2	1,158	5.0	10.3
Number of hospital stays					
None	188,653	7.4	315	4.3	8.7
1	18,164	19.9	890	4.5	10.4
2 or more	5,282	33.1	1,777	5.4	11.4

[a]Includes persons whose perceived health status, limitation of activity, and number of physician contacts are unknown. **Sou National Center for Health Services Research.**

medicine than blacks or Hispanics (9.9 percent versus roughly 7 percent for the latter two groups).

Comparisons by levels of education and income showed that, in general, the prevalence of psychotropic drug use varied inversely with years of schooling and family income. As many as 14.4 percent of persons with fewer than 12 years of education obtained psychotropic drugs in 1977, compared with 9.1 percent of persons with 16 years of education or more. Similarly, the rate of use in low-income families was 566 psychotropic drugs per 1,000 population, compared to 351 and 279 per 1,000, respectively, in middle- or high-income families.

Those employed all year were about as likely to obtain a psychotropic medicine as those employed only part of the year, but persons not employed during 1977 had both a higher likelihood and higher rates of use than the population total (15.4 percent used psychotropic drugs, for a rate of 825 items per 1,000). Also, the widowed were about four times as likely as those who were never married to use a psychotropic drug (21.7 as compared to 5.4 percent, for a difference in rates of 950 drugs per 1,000 population). This may partly reflect the relatively high age of the widowed, although it should be noted that persons who were separated or divorced also obtained psychotropic drugs at significantly higher levels than persons who were single or married.

There was little difference by U.S. Census region in the percent of persons obtaining psychotropic drugs. The South was the exception, where levels of use were slightly higher than in the nation as a whole.

In contrast to likelihood and overall rates of use, the rate of use per person with at least one prescription varied relatively little by the population characteristics shown. Children and young adults were the exception.

Psychotropic drugs constituted 9.2 percent of all prescribed medicines in 1977. There was again little deviation from this population total except among age groups, psychotropic drugs constituting a higher proportion of all prescribed medicines for both males and females 35 to 64 years than for those older than 65 years, and a relatively low proportion for children less than 19 years.

Health related characteristics. By contrast, both likelihood and rates of use of psychotropic drugs varied substantially by selected indicators of health and use of medical services. Among groups defined by perceived health status (Table 2), the difference in likelihood of use was almost tenfold: 4.3 percent of persons in excellent health and 8.9 percent of persons in good health, compared to 22.9 percent of persons in only fair health and 38 percent of persons in poor health. The number of psychotropic drugs per person using these substances ranged from 2.9 to 6.8 items across health status categories.

Use also was clearly associated with limitations of activity. Approximately 30 percent of persons either partly or wholly unable to perform their major activity obtained a prescription for psychotropic substances in 1977. Even those whose impairment did not limit their major

Expenditures for psychotropic drugs

In 1977, Americans spent about $513 million for prescribed psychotropic drugs, or an average of $27 per person with expense (Table 3). Expenses were lower than the national average only among males and females less than 35 years.

As for prescribed medicines in general (Kasper, 1982), the family paid the largest share of these expenses overall (68.2 percent). Private insurance paid 15.4 percent and other sources, such as Medicaid and CHAMPUS/CHAMPVA, paid an average of 16.4 percent.

The overall stability of the percentage paid by the family makes departures from this pattern for some population groups all the more striking. For example, the family contributed 20 percent more to the expenses for psychotropic medicines of females than of males in the 35-to-49 year age group (49 percent for males as compared to 70 percent for females), and 13 percent less to the expenses of veterans than of all other males. Relatively low contributions were made by the families of blacks and Hispanics (roughly 50 percent), compared to the families of whites (69 percent), and of those separated or divorced (44 percent).

These differences in payments by the family are reflected in the respective share paid by private insurance and other, largely public sources of payment. Private health insurance paid a quarter of expenses for males 35 to 49 years, and for veterans without a service connected disability, but only 15.5 percent for females in this age group. Also, private insurance contributed between a fifth and a quarter of annual expenses for psychotropic drugs of those with more than 12 years of education or in the highest income group; of people who worked all year in 1977; and of residents of the North Central region of the country.

Sources of payment other than the family and private health insurance contributed significantly more than the national average to expenses for prescribed psychotropic medicines of persons not employed in 1977; blacks and Hispanics; those with low levels of education and income; the never married and those separated or divorced; males in the 35-to-49 year age group; and disabled veterans. By contrast, while three times as many women 35 years and older had psychotropic drug expenses as men in these age groups, neither private health insurance nor other sources of payment contributed more than the national average to the expenses of these women.

Comparisons by region of the country indicated that the family paid more and private insurance paid less for psychotropic drug expenses in the South than the national average.

All told, the relatively small variation in annual expenses of those using psychotropic drugs was in marked contrast to differences in sources of payment among groups defined by several sociodemographic characteristics of the population. This was particularly noticeable for men and women in comparable age groups, for disabled veterans, and for the separated and divorced.

Table 3. Annual expenses and sources of payment for psychotropic drugs: Mean expense per pe with expense and percent paid by source of payment, by selected population characteristics. *NMCES house data: United States, 1977.*

Population characteristics	Total population with expense	Mean expense per person with expense	Source of payment		
			Family	Private health insurance	Other[a]
	Thousands	$	Percent distribution		
Total[b]	18,982	27	68.2	15.4	16.4
Sex					
All males	6,249	27	64.4	16.9	18.7
Less than 19 years	751	16	76.5	* 7.1	*16.4
19 to 34 years	956	19	54.5	*15.0	30.6
35 to 49 years	1,279	30	49.0	24.9	26.1
50 to 64 years	1,953	32	67.6	17.5	14.9
65 years and older	1,309	30	75.3	12.2	12.5
All females	12,733	27	70.0	14.7	15.3
Less than 19 years	553	*13	76.3	* 4.7	*19.0
19 to 34 years	2,267	18	60.5	19.4	20.0
35 to 49 years	3,088	26	70.1	15.5	14.3
50 to 64 years	3,821	33	68.3	14.7	17.1
65 years and older	3,004	29	76.5	12.4	11.1
Veteran status[c]					
All veterans	2,283	29	55.9	18.7	25.4
With service connected disability	391	34	34.4	* 5.8	59.8
No service connected disability	1,892	27	61.4	22.0	16.6
All other males	3,174	29	68.8	17.0	14.2
Ethnic/racial background					
White	14,379	29	69.1	17.0	13.9
Black	1,411	24	56.3	* 4.4	39.2
Hispanic	623	24	44.8	* 5.2	50.1
Family income					
Less than $12,000	8,202	30	69.8	8.4	21.8
$12,000 to $19,999	4,912	26	69.8	18.0	12.2
$20,000 or more	5,812	24	63.8	26.0	10.1
Education[d]					
Less than 12 years	7,713	30	67.8	9.2	23.0
12 years	5,854	27	67.7	21.8	10.5
13 to 15 years	2,158	24	71.9	21.4	* 6.7
16 or more years	1,588	29	66.6	21.6	11.8
Annual employment status[e]					
Employed full year	7,019	22	69.8	22.0	8.2
Employed part year	1,915	24	66.9	14.8	18.2
Not employed	8,373	32	67.0	11.8	21.2
Marital status[d]					
Single	1,715	25	61.0	11.4	27.7
Married	11,705	27	71.1	19.1	9.8
Widowed	2,461	33	72.9	7.5	19.6
Separated and divorced	1,819	28	44.4	11.0	44.7
U.S. Census region					
Northeast	4,120	26	68.1	14.1	17.7
North Central	4,467	30	64.8	21.3	13.9
South	6,893	27	73.4	10.8	15.8
West	3,502	25	62.5	17.6	19.8

[a]Includes Medicaid, CHAMPUS, CHAMPVA, the Indian Health Service, the Veterans Administration, the military, other federal, state, city or county payers, t thropic institutions, workers' compensation, and unknown sources of payment. [b]Includes all other ethnic/racial groups not shown separately and persons wi known education, employment status, and marital status, as well as persons with negative income. [c]All males 20 years or older. [d]Excludes persons under 17 y age. [e]Excludes persons under 14 years of age. *Relative standard error equal to or greater than 30 percent. **Source: National Center for Health Services Research.**

Expenses by selected indicators of health and use of services showed more predictable patterns of difference (Table 4). Among those obtaining psychotropic drugs, persons in excellent health spent $18 per year and persons in poor health spent $44. Similarly, persons without any activity limitation had much lower mean expenses ($24) than those in any way limited in their activity ($35 to $40). High levels of physician contacts in 1977 were associated with an increase in expenses for psychotropic drugs.

Statistically significant differences in sources of payment for these expenses were observed by level of activity limitation and the number of physician contacts.

Table 4. Annual expenses and sources of payment for psychotropic drugs and health status: Mean exp per person with expense and percent paid by source of payment, by selected health indicators. *NM household data: United States, 1977.*

Health indicators	Total population with expense	Mean expense per person with expense	Source of payment		
			Family	Private health insurance	O
	Thousands	$	Percent distribution		
Total[b]	18,982	27	68.2	15.4	1
Perceived health status					
Excellent	3,979	18	77.5	13.6	
Good	6,874	23	69.6	19.0	
Fair	4,999	31	69.0	13.2	
Poor	2,678	44	60.7	14.5	
Limitation of activity					
No limitation of activity	11,929	24	71.2	15.5	
Limited, but not in major activity	625	35	67.3	*15.2	
Limited in amount or kind of major activity	2,352	38	60.8	18.2	
Unable to carry on major activity	2,031	40	63.3	13.0	
Number of physician contacts					
None	686	20	75.7	* 5.6	*
1 to 2	2,634	20	77.1	11.7	
3 to 5	4,489	24	75.5	13.0	
6 or more	11,173	30	64.2	17.2	
Number of hospital stays					
None	13,667	26	70.2	14.4	
1	3,579	29	65.4	15.0	
2 or more	1,735	31	60.2	22.4	

[a]Includes Medicaid, CHAMPUS, CHAMPVA, the Indian Health Service, the Veterans Administration, the military, other f state, city or county payers, philanthropic institutions, workers' compensation, and unknown sources of payment. [b]Includ sons whose perceived health status, limitation of activity, and number of physician contacts are unknown. *Relative st error equal to or greater than 30 percent. **Source: National Center for Health Services Research.**

Psychotropic drug use by selected medical conditions

Table 5 shows the distribution of prescribed psychotropic dru by patient-reported condition groups. About half of the 85 millic psychotropic drugs obtained in 1977 were for mental disorders (51. percent), and of those, about 24 million (28.1 percent of the tot were for nervousness and depression. Conditions of the circulato system were the only other condition group accounting for mo than 10 percent of all psychotropic drug prescriptions (14.2 percent).

Table 5. Psychotropic drug use and associated medical conditions: Percent distributions of psychotrop drugs by condition group and type of drug. *NMCES household data: United States, 1977.*

Condition group	Total psychotropic drugs	Percent of all psychotropic drugs	Type of drug	
			Anti-anxiety	All other
	Thousands		Percent distribution	
Total	84,989	100.0	53.6	46.4
Endocrine, nutritional, and metabolic conditions	986	1.2	37.9	62.1
Neoplasms	691	0.8	34.6	65.4
Malignant	610	*0.7	35.5	64.5
Mental disorders	43,825	51.6	53.8	46.2
Neuroses	3,249	3.8	53.0	47.0
Nervousness and depression	23,920	28.1	59.0	41.0
Transient situational disturbances	4,766	5.6	62.9	37.1
All other mental conditions	11,891	14.0	39.9	60.1
Conditions of the central nervous system and sense organs	3,736	4.4	28.5	71.5
Conditions of the circulatory system	12,104	14.2	65.7	34.3
Heart disease	4,006	4.7	65.9	34.1
All other circulatory conditions	8,098	9.5	65.7	34.3
Conditions of the respiratory system	2,517	3.0	46.9	53.1
Conditions of the digestive system	2,236	2.6	50.8	49.2
Conditions of the genitourinary system	1,982	2.3	60.8	39.2
Conditions of the skin and subcutaneous tissue	1,041	1.2	81.1	18.9
Conditions of the musculoskeletal system and connective tissue	4,005	4.7	62.6	37.4
Accidents, poisonings, and violence	2,018	2.4	72.9	27.1
All other conditions	9,849	11.6	40.2	59.8

[a]Sedatives (18.7 percent), antidepressants (17.4 percent), and antipsychotic substances (10.3 percent). *Relative standard er equal to or greater than 30 percent. **Source: National Center for Health Services Research.**

Antianxiety agents were most commonly prescribed, accounting for slightly more than half of all psychotropic drugs purchased in 1977 and for the majority of prescriptions filled in most condition groups. Other types of psychotropic drugs (sedatives, antidepressants, and antipsychotic agents) accounted for a total of 18.7, 17.4, and 10.3 percent, respectively, and comprised 39 million items. Within specific condition groups, they were obtained more frequently than antianxiety agents only for conditions of the central nervous system and sense organs (71.5 percent versus 28.5 percent).

Summary

Psychotropic drugs accounted for 9.2 percent of all medicines prescribed in the U.S. in 1977. Generally, those more likely to obtain a prescribed medicine also were more likely to obtain a psychotropic drug. Exceptions were those in lower income families or in families at lower levels of education, who were more likely than others to obtain a prescribed medicine. Further, among those most likely to obtain a psychotropic drug were women 35 years or older, men above 50 years of age, disabled veterans, those not in the labor force, and the widowed, separated, and divorced. There was little variation in the number of psychotropic drugs obtained by those with at least one prescription, in contrast to the rates for all types of prescribed medicines. The likelihood of obtaining a psychotropic drug was clearly associated with several indicators of poor health, including activity limitations and high numbers of physician visits.

Patterns of sources of payment for psychotropic drugs also differed from those for prescribed medicines in general. The family was the major payer overall, but generally paid a substantially lower percentage of annual expenses for psychotropic drugs for men 19 to 49 years of age, disabled veterans, minorities, and the separated and divorced.

Although the total volume of prescibed psychotropic drugs (85 million) and their percentage of all prescribed medicines represent a sizeable level of use, the findings in this paper should be considered in conjunction with those from other studies. A decrease in the use of some classes of psychotropic drugs (Mellinger and Balter, 1981; Parry, Balter, and Mellinger, 1973; National Institute on Drug Abuse, 1977) has been observed as part of a general decrease in prescriptions beginning in the early 1970s (Rabin, 1983). The data in this report do not appear to contradict this trend.

Sources and Limitations of the Data

The data in this report were obtained in the major survey component of the National Medical Care Expenditure Survey (NMCES). In five rounds of household interviews, information was elicited on the use of and expenditures for health services. The survey reference period was January 1 to December 31, 1977. For the interview instruments, see *NHCES Instruments and Procedures 1* (Bonham and Corder, 1981). Information supplied by the respondent was amended in each round through the household summary update process, which allowed the respondent to correct or add to the information provided in previous interviews. Trained interviewers then updated a computer-generated summary of both expenditures and sources of payment for health care previously reported by the respondent. In the fifth interview, respondents reviewed with the interviewer each reported event of health care shown in the household summary. Information on prescribed medicines missing by the end of all five rounds of interviewing were imputed as described in *NHCES Data Preview 9* (Kasper, 1982).

Population characteristics

Family income. Incomes as reported for each member of the family during round 5 were summed across income types and family members to yield measures of total annual gross family income. The results approximated data from the March 1977 *Current Population Survey* of the U.S. Census Bureau on total income per family and the percent distribution of persons and families by categories of family income.

Annual employment status. For psychotropic drug use, employment status throughout the survey reference year (January 1 to December 31, 1977) was based on questions asked twice during the survey, once in round 3 or 4 and once in round 5. Persons were defined as employed all year if they were employed continuously from January 1 to December 31, 1977, or if they worked at some time during 1977 but the continuity of their employment was unknown. Persons were defined as employed part of the year if they worked at some time but not the whole year in their current position, and were known not to have been working at some point during 1977. Persons not employed in 1977 included all civilians 14 years of age or older not classified as employed all or part of the year.

Race/Ethnicity. Classification by ethnic/racial background was developed from a series of questions asked in the round 5 interview. Persons 17 years of age or older were asked if their racial background were best described as American Indian or Alaskan Native; Asian or Pacific Islander; black; white; or other. They also were asked if their main national origin or ancestry was among one of the following:

- Puerto Rican
- Cuban
- Mexican
- Mexicano
- Chicano
- Mexican-American
- Other Latin American
- Other Spanish

This grouping classifies as Hispanic all persons who claimed main national origin or ancestry in one of these Hispanic groups, regardless of racial background. Other persons were then classified as white, black, or other depending on their reported racial background.

These classifications were extended to the under 17 population based on family relationship codes. Persons who dropped out of the survey prior to round 5 were coded as unknown.

Limitation of activity. Persons were classified into four categories according to their reported activity limitation as a result of chronic health conditions (conditions that had lasted longer than three months by the time of the last interview). This classification was adapted from that used by the National Center for Health Statistics (1977). Briefly, the four activity categories are:

- Unable to carry on major activity for one's group (major activity refers to ability to work, keep house, or engage in school or preschool activities).
- Limited in amount or kind of major activity performed. Includes preschool children not able to play strenuous games; school-age children limited to certain types of schools or in school attendance; housewives limited in amount or kind of housework; workers and all others limited in amount or kind of work such as needing special working aids or special rest periods, not able to work full tir or for long periods at a time.
- Not limited in major activity but otherw limited. Includes school-age children r limited in going to school but limited in participation in athletics or other e tracurricular activities; housewives not limited in housework but in other activit such as church, clubs, hobbies; work and all others not limited in regular work but limited in activities such as church, clubs, hobbies, sports. Presch children are not classified in this cate gory.
- Not limited in any of the ways descril above.

Condition groups. Health conditic reported in the household survey we classified by type according to the *International Classification of Diseas Adapted for Use in the United Stat Eighth Revision* (National Center for Health Statistics, 1967), with certain modifications adopted to make the code more suitable for a household s vey.

Definition of Terms

Psychotropic drugs. All medicines affecting the central nervous system and categorized by *AMA Drug Evalu ations* (1973) as sedatives and hypnotic antianxiety agents, antipsychotic agen or antidepressants. Prescriptions for such drugs in the context of this pap refer to all drugs or medical preparatio reported as prescribed by a physicia and purchased or otherwise obtainec including refills.

Use of medicines. The question asked of NMCES respondents was, "Did you buy or obtain any prescrib medicines?" That the medicine was then in fact taken or applied is not inferred in the term "use of psychotrop drugs" in this paper.

Annual expenditures. The sum of charges for psychotropic drugs obtaine during the period January 1, 1977 t December 31, 1977.

Physician contact. Any contact w a doctor of medicine (M.D.) or doct of osteopathy (D.O.) in the physician office, a patient's home, a hospital outpatient department, emergency roc or other medical setting, including medical advice over the telephone.

Hospital stay. Stays in short or long term facilities listed in the *Americ Hospital Association Guide to the Hea Care Field* (1978).

Technical Notes

Sample design

The survey sample was designed to produce statistically unbiased national estimates that are representative of the civilian noninstitutionalized population of the United States. To this end, the study used the national multistage area samples of the Research Triangle Institute and the National Opinion Research Center. Sampling specifications required the selection of about 14,000 households. Data were obtained for about 91 percent of eligible households in the first interview and 82 percent by the fifth interview. Approximately 11 percent of all survey participants provided data for only some of the time in which they were eligible to respond. Information for these respondents was adjusted to account for this partial nonresponse (Cohen, 1981). For a detailed description of the survey sample and of sampling, estimation, and adjustment methods, including weighting for nonresponse and poststratification, *see* Cohen and Kalsbeek, 1981.

Reliability of estimates

Since the statistics presented in this report are based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken. This potential difference between sample results and a complete count is the sampling error, which is measured by a statistic called the standard error of the estimate.

The chance that an estimate from the sample would differ from a complete census by less than one standard error is about 68 out of 100. The chance that the difference between the sample estimate and a complete census would be less than twice the standard error is about 95 out of 100.

Tests of statistical significance were used to determine whether differences between population estimates exist at specified levels of confidence or whether they simply occurred by chance. Differences were tested using Z-scores having asymptotic normal properties, based on the rounded figures at the 0.05 level of significance. Unless otherwise noted, only statistically significant differences between estimates are discussed in the text.

Rounding

Estimates as presented in the tables are rounded to the nearest tenth of a percent and to the nearest dollar.

Estimated standard errors

Standard errors for the statistics presented in this paper were approximated, by interpolation where necessary, using a curve smoothing procedure developed at the National Center for Health Services Research (Cohen, 1979).

Relative standard errors

Totals : Where the statistics of interest are total estimates (T) of the population, of prescribed psychotropic drugs obtained, or of prescribed psychotropic drug expenditures, an estimate of the standard error, SE, can be obtained by multiplying the relative standard error, expressed as a percent, of the respective T, RSE(T), by T, and then dividing by 100. Thus,

$$SE(T) = \frac{T(RSE(T))}{100}$$

For estimated population totals, the approximate relative standard errors expressed as percent are as follows:

Table I

Estimated population totals (in thousands)	Relative standard error (%)
500	18.9
1,000	13.5
2,500	8.7
5,000	6.4
10,000	4.8
25,000	3.5
50,000	3.0
100,000	2.6
200,000	2.4

Example: An estimate of 19 million persons in the U.S. population with at least one prescribed psychotropic medicine (212,098,000 x .091, Table 1) has a relative standard error of between 3.5 and 4.8 percent (Table I) or, by interpolation, a relative standard error of about 4.0. The standard error of this estimate, then, is

$$SE(T) = \frac{\sqrt{19,300,918}(4.0)}{100} = 772,073$$

For the estimated number of prescrib psychotropic drugs obtained, the approximate relative standard errors ex pressed as percent are as follows:

Table II

Estimate of prescribed medicines obtained (in thousands)	Relative standarc error (%
500	33.6
1,000	23.9
2,500	15.4
5,000	11.2
10,000	8.4
25,000	6.1
50,000	5.1
100,000	4.5
250,000	4.1
500,000 or above	4.0

For the estimated prescribed psych tropic medicine expenditures, the appro imate relative standard errors expresse as percent are as follows:

Table III

Estimate of expenditures (in thousands of dollars)	Relative standard error (%)
25,000	13.4
50,000	9.9
100,000	7.5
250,000	5.7
500,000	4.9
1,000,000	4.5
2,500,000	4.2
5,000,000	4.1
10,000,000	4.0
25,000,000 or above	4.0

Ratios: When the statistic of inter is a ratio, Y, such as a rate, mean, percent, both the relative standard er of the numerator, RSE(N), and the relati standard error of the denominat RSE(D), must be considered. Thus, Y N/D, and the standard error of Y is appr imated by:

$$SE(Y) \simeq Y \frac{\sqrt{RSE(N)^2 + RSE(D)^2}}{100}$$

where

$$Y = \frac{\text{number of psychotropic drugs}}{\text{number of population}}$$
or
persons with psychotropic drugs

for the mean number of psychotropic drugs per population or person with psychotropic drugs;

$$Y = \frac{\text{total expenditures}}{\text{persons with expense}}$$

for the mean expense per person with expense;

$$Y = \frac{\text{total paid by source}}{\text{total expenditures}}$$

for the percent of expenses attributed to each source of payment.

Example: For the standard error of the mean expense for prescribed psychotropic drugs per person with expense ($27; Table 4), the relative standard error of the numerator, SE(N), is 4.9 percent (18,982,000 persons with expense x $27 = $513 million; Table III); and the relative standard error of the denominator is approximately 4.0 (Table I). Then the standard error is:

$$SE(\$27) = \$27 \frac{\sqrt{(4.9)^2 + (4.0)^2}}{100} = \$1.71$$

Direct standard error estimates

When the statistic of interest is expressed as a person or event based measure, direct estimates of standard errors have been derived for ease of calculation. For the estimated percent of persons with or without at least one prescribed psychotropic drug, approximate standard errors expressed as percent are shown in Table IV. For the estimated percent of psychotropic drugs by condition group and type of drug, approximate standard errors expressed as a percent are shown in Table V.

Table IV

Persons in the base of the percent (in thousands)	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Approximate standard error (in percent)						
1,000	1.9	2.9	4.0	5.3	6.1	6.5	6.6
2,500	1.2	1.8	2.5	3.4	3.8	4.1	4.2
5,000	0.8	1.3	1.8	2.4	2.7	2.9	3.0
10,000	0.6	0.9	1.3	1.7	1.9	2.1	2.1
25,000	0.4	0.6	0.8	1.1	1.2	1.3	1.3
50,000	0.3	0.4	0.6	0.8	0.9	0.9	0.9
100,000	0.2	0.3	0.4	0.5	0.6	0.7	0.7
200,000	0.1	0.2	0.3	0.4	0.4	0.5	0.5

Example: The estimate of 9.1 percent of the U.S. population with at least one prescribed psychotropic drug in 1977 is based on a population total of 212,098,000 (Table 1). The estimate has a standard error of approximately 0.3 percent.

Table V

Number of prescribed medicines in the base of the percent (in thousands)	Estimated percent						
	2 or 98	5 or 95	10 or 90	20 or 80	30 or 70	40 or 60	50
	Approximate standard error (in percent)						
1,000	2.2	3.5	4.6	6.1	7.0	7.5	7.7
2,500	1.4	2.1	2.9	3.9	4.5	4.8	4.9
5,000	0.9	1.5	2.1	2.7	3.1	3.4	3.4
10,000	0.7	1.1	1.5	1.9	2.2	2.4	2.4
25,000	0.4	0.7	0.9	1.3	1.4	1.5	1.5
50,000	0.3	0.5	0.7	0.9	1.0	1.1	1.1
100,000	0.2	0.3	0.5	0.6	0.7	0.8	0.8
250,000	0.1	0.2	0.3	0.4	0.4	0.5	0.5
500,000	0.1	0.1	0.2	0.3	0.3	0.3	0.3

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